

Proposal (35) to conserve the name *Festucion valesiacae*

Jean-Paul Theurillat^{1,2}, Romeo Di Pietro³, Norbert Bauer⁴, Massimo Terzi⁵

¹ Centre Alpin de Phytogéographie, Fondation J.-M. Aubert, Champex-Lac, Switzerland

² Department of Plant Sciences, Section of Biology, University of Geneva, Chambésy, Switzerland

³ Department of Planning, Design and Architecture Technology, Section of Environment and Landscape, Sapienza University of Rome, Roma, Italy

⁴ Hungarian Natural History Museum, Botanical Department, Budapest, Hungary

⁵ Institute of Bioscience and Bioresources, CNR, Bari, Italy

Corresponding author: Jean-Paul Theurillat (jean-paul.theurillat@unige.ch)

Academic editor: Wolfgang Willner

Received 21 June 2023 ◆ Accepted 14 November 2023 ◆ Published 11 December 2023

Abstract

For ninety years, the alliance name *Festucion valesiacae* has been widely and almost exclusively used to designate the alliance of steppic, xeric grasslands on deep soils from Central Europe to western Ukraine. However, there is an earlier, hardly used heterotypic synonym, the *Festucion sulcatae*, that would be the correct name according to the rules [recte: *Festucion rupicolae* nom. corr.]. In order to preserve a well-established name, we propose to conserve the name *Festucion valesiacae* against the name *Festucion sulcatae*. In addition, we typify the name *Festucion rupicolae* Soó 1930 nom. corr. with the association *Festuco rupicolae-Stipetum pennatae* Soó 1930 nom. corr., for which we also select a neotype. This proposal is supported by the fact that the alliance *Festucion valesiacae* is the conserved type of the order *Festucetalia valesiacae*.

(35) *Festucion valesiacae* Klika 1931

Typus: *Ranunculo illyrici-Festucetum valesiacae* Klika 1931 (lectotypus designated by Toman 1975: 131)

(=) *Festucion rupicolae* Soó 1930 nom. corr. (≡ *Festucion sulcatae* Soó 1930 nom. incept.)

Typus: *Festuco rupicolae-Stipetum pennatae* Soó 1930 nom. corr. (lectotypus hoc loco)

Taxonomic reference: Euro+Med (2023) unless otherwise indicated.

Syntaxonomic reference: Mucina et al. (2016).

Abbreviations: EVC = EuroVegChecklist (Mucina et al. 2016); ICPN = 4th edition of the International Code of Phytosociological Nomenclature (Theurillat et al. 2021).

Keywords

Europe, *Festucion rupicolae*, *Festucion valesiacae*, *Festucetalia valesiacae*, *Festuco-Brometea*, conserved name, nomenclature, phytosociology

Introduction

The name *Festucion valesiacae* Klika 1931 is widely used to designate, according to EVC, the alliance that contains

the “steppe fescue grasslands on deep calcareous soils of subcontinental Central Europe, Romania, Bulgaria and northwestern Ukraine” (see also Royer 1991; Pott 1992; Mucina et al. 1993, 2016; Oberdorfer 1993; Theurillat et

al. 1995; Passarge 2002; Berg et al. 2004; Chifu et al. 2006; Chytrý 2007; Dúbravková et al. 2010; Borhidi et al. 2012; Dengler et al. 2012; Willner et al. 2013, 2017; Kuzemko et al. 2014; Leuschner and Ellenberg 2017; Solomakha et al. 2017). Klika (1931: 376) published the name “*Festucion valesiacae*” in a study about the xerothermic vegetation of the Pavlov Hills, a region in Southern Moravia (Czech Republic) close to the Austrian border. For many years, the name has been accepted as an eastern, more continental vicariant of the western alliance *Bromion erecti* W. Koch 1926 (Braun-Blanquet 1936; Braun-Blanquet and Moor 1938) within the class *Festuco-Brometea*.

In 1929, Soó published the alliance name *Festucion sulcatae* as a nomen nudum (Soó 1929a: 335). One year later, Soó (1930a: 28–32) published, in a paper on phytosociology in Hungary, the alliance (“asszociáció-csoport” in Hungarian) *Festucion sulcatae* to include the “Pannonic meadows” in the Balaton region. This name was later used by Soó himself (e.g., Soó 1931, 1939, 1940, 1947, 1959, 1964, 1968, 1973) and Hungarian authors (e.g., Zólyomi 1936, 1966; Borhidi 1956, 2003; Timár and Bodrogközy 1959; Debreczy 1966), sometimes with the *Festucion valesiacae* (or *Festucion valesiacae* pro parte) as a synonym (e.g., Soó 1934, 1940, 1947, 1959, 1964, 1973) or the opposite (e.g., Borhidi 1995). According to ICPN Art. 44, the name *Festucion sulcatae* is a nomen ineptum [recte: *Festucion rupicolae* Soó 1930 nom. corr.] since the correct name at the specific rank of “*Festuca sulcata*”, as used by Soó, is *F. rupicola* Heuff. 1858. [Remark: Since the name-giving taxon is now often used at the subspecific rank, namely *F. stricta* subsp. *sulcata* (Hack.) Pils 1984, as in Euro+Med (2023), using the name *Festucion sulcatae* would be possible with a mutation in accordance with Arts. 32b, 45.] The original diagnosis of the *Festucion sulcatae* Soó 1930 included three associations forming a complex of associations (“*Festuca sulcata-Carex humilis-Stipa joannis* asszociációkomplex”), namely “*Festuca sulcata-Stipa joannis*, *Festuca sulcata-Carex humilis* and *Stipa joannis-Carex humilis* asszociáció” (Soó 1930a, p. 28), occurring on the south- or east-facing limestone and dolomite substrates of the Hungarian Central Mountains. The original diagnosis of the associations is a synoptic table from the hills of the Balaton region (Tihany, Balatonfüred, Arács, Csopak, Gyenesdiás, Keszthely). The association complex *Festuca sulcata-Carex humilis-Stipa joannis* and its three associations, especially the *Festuco sulcatae-Stipetum joannis* [recte: *Festuco rupicolae-Stipetum pennatae*], were mentioned several times as nomina nuda for the Balaton region in earlier publications by Soó (e.g., 1928, 1929a, b, c, 1930b). Soó (1934: 687–688) provided further information on the ecology of the association complex and the differential species between the three associations. These associations were usually included in the *Festucion rupicolae* by later authors and not united with the rocky, xerophilous communities with *Festuca pallens* aggr. (*Seslerio-Festucion glaucae* [*Bromo pannonicci-Festucion csikhegyensi*], *Asplenio-Festucion glaucae*) (e.g., Zólyomi 1936). Then, by analogy with the *Diplachno serotinae-Festucetum sulcatae matricum* described by Zólyomi (1958), Soó (1959) united the *Festuco rupicolae-Stipetum pennatae* nom. corr. and other

associations under the superfluous and illegitimate name *Diplachno serotinae-Festucetum sulcatae balatonicum*, which he renamed *Cleistogeno serotinae-Festucetum rupicolae* (Soó 1964). Recently, Borhidi et al. (2012) and Bauer (2014) included the *Festuco rupicolae-Stipetum pennatae* Soó 1930 nom. corr. and the *Festuco rupicolae-Caricetum humilis* Soó 1930 nom. corr. in the *Festuco valesiacae-Stipetum capillatae* Sillinger 1930. The original diagnosis of the *Festuco valesiacae-Stipetum capillatae* contains only one relevé (Sillinger 1930: 34–38), which is the holotype. According to Janišová et al. (2007), Chytrý (2007) and Borhidi et al. (2012), this association extends from northern and central Bohemia and southern Moravia to western Slovakia and Hungary. For Bauer (2014), the *Festuco sulcatae-Stipetum joannis* forms a variant with *Artemisia austriaca* of the *Festuco valesiacae-Stipetum capillatae*.

Dengler et al. (2012: 349) argued that, in 1947, Soó described unintentionally a later homonym of the *Festucion sulcatae* Soó 1930 with a different syntaxonomic content, namely for more mesophilous plant communities, therefore rendering the *Festucion sulcatae* a nomen ambiguum (p. 330, 333, 344). This interpretation was followed by Kuzemko et al. (2014) and in the EVC. According to Terzi et al. (2016, 2017), this consideration was due to an inadequate bibliographical interpretation of the references provided in Soó (1947). In fact, the *Festucion sulcatae* Soó 1930 is an earlier, heterotypic synonym of the *Festucion valesiacae* Klika 1931, as stated explicitly in Soó (1940: 30) and acknowledged by Dengler et al. (2012: 349), Dúbravková et al. (2010: 192, sub *Festucion rupicolae* Soó 1940 corr. 1964) and in the EVC. Therefore, several authors already suggested to conserve the well-established name *Festucion valesiacae* Klika 1931 against the name *Festucion sulcatae* Soó 1930 (e.g., Kuzemko et al. 2014; Mucina et al. 2016; Terzi et al. 2016; Solomakha et al. 2017).

At the order level, the alliance *Festucion sulcatae* Soó 1930 was designated by Terzi et al. (2016: 311) as the lectotype of the *Festucetalia* published by Soó (1940: 32) and, therefore, is also the type of the superfluous name *Festucetalia valesiacae* Soó (1940) 1947 (Terzi et al. 2016). Due to the heterogeneity of the syntaxonomic content of their original diagnoses, which makes them problematic, especially with respect to the current use of the name *Festucetalia valesiacae* (Willner et al. 2021), both of Soó's order names have been proposed for rejection against the name *Festucetalia valesiacae* Braun-Blanquet et Tüxen ex Braun-Blanquet 1950 (Proposal 21), whose holotype is the alliance *Stipo-Poion xerophilae* Braun-Blanquet et Tüxen ex Braun-Blanquet 1950 (Terzi et al. 2016, 2017; Willner et al. 2021). However, since the lectotype of the name *Stipo-Poion xerophilae* Braun-Blanquet et Tüxen ex Braun-Blanquet 1950, namely the *Astragalo onobrychidis-Brometum erecti* Braun-Blanquet 1950 (Terzi et al. 2016: 306), is a more mesic association that does not correspond to the current concept of xeric grasslands pertaining to the *Festucetalia valesiacae*, a modified Proposal 21* was issued (Willner et al. 2021: 307) to conserve the *Festucetalia valesiacae* Braun-Blanquet et Tüxen ex Braun-Blanquet 1950 with the alliance *Festucion valesiacae* Klika 1931 as the conserved type. Following the adoption of Proposal 21* by

the GPN Assembly on 14 April 2023, the alliance *Festucion valesiacae* is now the conserved type of the name *Festucetalia valesiacae*, and maintaining the name *Festucion rupicolae* nom. corr. (*Festucion sulcatae* nom. inept.) as the correct name at the alliance level for priority reasons (ICPN Art. 22) may cause some incongruity. Indeed, one would expect the conserved type of the order *Festucetalia valesiacae* to be at the same time the correct name of an alliance included in that order, and not just a syntaxonomic synonym. Nevertheless, even if our proposal is accepted, the name *Festucion rupicolae* Soó 1930 nom. corr. could still be used if this alliance is considered as a syntaxon distinct from the *Festucion valesiacae* (ICPN Art. 52, Note 3).

Proposal

In accordance with Art. 52, we propose to conserve the name *Festucion valesiacae* Klika 1931 against the heterotypic synonym *Festucion rupicolae* Soó 1930 nom. corr. [\equiv *Festucion sulcatae* Soó 1930 nom. inept.], in line with the conservation of the name *Festucetalia valesiacae* Braun-Blanquet et Tüxen ex Braun-Blanquet 1950 with the conserved type *Festucion valesiacae* Klika 1931 against the names *Festucetalia* Soó 1940 and *Festucetalia valesiacae* Soó 1947.

We select the *Festuco rupicolae-Stipetum pennatae* Soó 1930 nom. corr. [\equiv *Festuca sulcata-Stipa joannis-asszociáció* Soó 1930 nom. inept.] in Soó (1930, pp. 28–31) as the lectotype (lectotypus hoc loco) of the *Festucion rupicolae* Soó 1930 nom. corr. [\equiv *Festucion sulcatae* Soó 1930 nom. inept.].

Since the original diagnosis of the *Festuco rupicolae-Stipetum pennatae* Soó 1930 nom. corr. is a synoptic table, and to our knowledge there are no published relevés by Soó for this name, we also select a neotype for the name. To anchor the *Festuco rupicolae-Stipetum pennatae* in the *Festucion valesiacae*, we select a relevé corresponding to a closed, xeric stand on deep soil of the *Festuco valesiacae-Stipetum capillatae* sensu Bauer (2014) from the Balaton region, where Soó described the association. Figure 1 shows a typical stand of the *Festuco valesiacae-Stipetum capillatae* from this region. The selected neotype is relevé 48 in the Appendix 16.19 in Bauer (2014) (neotypus hoc loco) from the Bakony region, Tihany, Csúcs-hegy (Tihany peninsula, Balaton Uplands); geographical coordinates: 46.90866259580°N, 17.85194271370°E; elevation: 190 m a.s.l.; aspect: west; slope: 20°; substrate: basalt tuff; plot size: 4 m²; total vegetation cover: 81%; date: 17.05.2002; author: Norbert Bauer. Species list (cover in %; + = < 1%): *Festuca rupicola* 15, *Stipa pennata* [= *S. joannis*] 25, *Allium flavum* +, *Alyssum alyssoides* +, *Arenaria serpyllifolia* +, *Artemisia austriaca* +,



Figure 1. A view of a steppe meadow of the *Festucion rupicolae* with a stand of the *Festuco rupicolae-Stipetum pennatae* on the Tamás hill above Balatonfüred in the Balaton region, a place visited by Soó. On the picture you can see *Stipa pennata* (= *S. joannis*), *Verbascum phoeniceum*, *Veronica prostrata*, *Euphorbia cyparissias* and *Campanula sibirica*. Photo: N. Bauer.

Galium glaucum +, *Astragalus onobrychis* 5, *Bromus squarrosus* +, *Centaurea stoebe* aggr. +, *Cerastium pumilum* +, *Clinopodium acinos* +, *Convolvulus cantabrica* 5, *Cotinus coggygria* 1, *Crupina vulgaris* +, *Euphorbia cyparissias* 1, *Helianthemum nummularium* subsp. *obscurum* 1, *Hippocratea comosa* 1, *Hypericum perforatum* +, *Iris pumila* 3, *Koeleria cristata* 1, *Linaria genistifolia* +, *Medicago minima* 3, *Noccaea perfoliata* +, *Orlaya grandiflora* +, *Potentilla incana* 5, *Rosa canina* aggr. 1, *Prospero autumnale* +, *Stipa capillata* +, *Teucrium chamaedrys* 3, *Thymus odoratissimus* 3, *Valerianella coronata* +.

The relevé belongs to the variant with *Artemisia austriaca* of the *Festuco valesiacae-Stipetum capillatae* (Bauer 2014).

References

- Bauer N (2014) A Bakony-vidék szárazgyepjei. Sztyeprétek és sziklagyeppek osztályozása és növényföldrajzi karaktere [Dry grasslands of the Bakony Region. Classification and phytogeographical character of dry and rocky grasslands]. A Bakony természettudományi kutatásának eredményei 33. Magyar Természettudományi Múzeum, Zirc, HU, 336 pp.
- Berg C, Dengler J, Abdank A, Isermann M (Eds) (2004) Die Pflanzengesellschaften Mecklenburg-Vorpommerns und ihre Gefährdung – Textband. Weissdorn-Verlag, Jena, DE, 606 pp.
- Borhidi A (1956) Die Steppen und Wiesen im Sandgebiet der Kleinen Ungarischen Tiefebene. Acta Botanica Academiae Scientiarum Hungaricae 2: 241–274.
- Borhidi A (1995) Social behaviour types, the naturalness and relative ecological indicator values of the higher plants in the Hungarian flora. Acta Botanica Hungarica 39: 97–181.
- Borhidi A (2003) Magyarország növénytársulásai [Plant communities of Hungary]. Akadémiai Kiadó, Budapest, HU, 610 pp.
- Borhidi A, Kevey B, Lendvai G (2012) Plant communities of Hungary. Akadémiai Kiadó, Budapest, HU, 544 pp.
- Braun-Blanquet J (1936) Über die Trockenrasengesellschaften des *Festucion vallesiacae* in den Ostalpen. Berichte der Schweizerischen Botanischen Gesellschaft 46: 169–189.
- Braun-Blanquet J, Moor M (1938) Prodromus der Pflanzengesellschaften. 5. Verband des *Bromion erecti*. Comité International du Prodrome Phytosociologique, Montpellier, FR, 64 pp.
- Chifu T, Mânuță C, Zamfirescu O (2006) Flora și vegetația Moldovei (România). II. Vegetația [Flora and vegetation of Moldova (Romania). II. Vegetation]. Editura universității «Alexandru Ioan Cuza», Iași, RO, 698 pp.
- Chytrý M (Ed.) (2007) Vegetace České republiky. 1. Travinná a keříčková vegetace [Vegetation of the Czech Republic. 1. Grassland and heathland vegetation]. Academia, Praha, CZ, 526 pp.
- Debreczy Z (1966) Die xerothermen Rasen der Péter- und Tamás-Berge bei Balatonarács. Annales historico-naturales Musei nationalis hungarici. Pars botanica 58: 223–241.
- Dengler J, Becker T, Ruprecht E, Szabó A, Becker U, Beldean M, Bita-Nicolae C, Dolník C, Goia I, ... Uğurlu E (2012) *Festuco-Brometea* communities of the Transylvanian Plateau (Romania) – a preliminary overview on syntaxonomy, ecology, and biodiversity. Tuexenia 32: 319–359.
- Dúbravková D, Chytrý M, Willner W, Illyés E, Janisová M, Kállayné Szerényi J (2010) Dry grasslands in the Western Carpathians and the northern Pannonian Basin: a numerical classification. Preslia 82: 165–221.
- Euro+Med (2023) The Euro+Med PlantBase – the information resource for Euro-Mediterranean plant diversity. <https://europlusmed.org/> [accessed 19 June 2023]
- Janišová M, Hájková P, Hegedűšová K, Hrvnák R, Kliment J, Michálková D, Ruzicková H, Ruzicková H, Tichý L, ... Zaliberová M (2007) Travnobylinná vegetácia Slovenska – elektronický expertný systém na identifikáciu syntaxónov [Grassland vegetation of Slovak Republic – electronic expert system for identification of syntaxa]. Botanický ústav SAV, Bratislava, CZ, 263 pp.
- Klika J (1931) Studien über die xerotherme Vegetation Mitteleuropas – I. Die Pollauer Berge im südlichen Mähren. Beihefte zum Botanischen Centralblatt, Abteilung 2, Systematik, Pflanzengeographie, angewandte Botanik 47: 343–398.
- Kuzemko AA, Becker T, Didukh YP, Ardelean IV, Becker U, Beldean M, Dolník C, Jeschke M, Naqinezhad A, ... Dengler J (2014) Dry grassland vegetation of Central Podolia (Ukraine) – a preliminary overview of its syntaxonomy, ecology and biodiversity. Tuexenia 34: 391–430.
- Leuschner C, Ellenberg H (2017) Vegetation ecology of Central Europe. 2. Ecology of Central European non-forest vegetation: coastal to alpine, natural to man-made habitats. Springer, Cham, CH, 1093 pp. <https://doi.org/10.1007/978-3-319-43048-5>
- Mucina L, Grabherr G, Ellmauer T (Eds) (1993) Die Pflanzengesellschaften Österreichs. I. Anthropogene Vegetation. Gustav Fischer Verlag, Stuttgart, DE, 578 pp.
- Mucina L, Bültmann H, Dierßen K, Theurillat JP, Raus T, Čarní A, Šumberová K, Willner W, Dengler J, ... Tichý L (2016) Vegetation of Europe: hierarchical floristic classification system of vascular plant, bryophyte, lichen, and algal communities. Applied Vegetation Science 19(Suppl. 1): 3–264. <https://doi.org/10.1111/avsc.12257>
- Oberdorfer E (Ed.) (1993) Süddeutsche Pflanzengesellschaften. Teil II. Sand- und Trockenrasen, Heide- und Borstengrasgesellschaften, alpine Magerrasen, Saum-Gesellschaften, Schlag- und Hochstauden-Fluren. 3rd ed. Gustav Fischer Verlag, Stuttgart, DE, 355 pp.
- Passarge H (2002) Pflanzengesellschaften Nordostdeutschlands 2. III. Caespitosa und Herbosa. Cramer, Stuttgart, DE, 304 pp.
- Pott R (1992) Die Pflanzengesellschaften Deutschlands. E. Ulmer, Stuttgart, DE, 427 pp.
- Royer JM (1991) Synthèse eurosibérienne, phytosociologique et phytogéographique de la classe des *Festuco-Brometea*. Dissertationes Botanicae 178: 1–296.
- Sillinger P (1930) Vegetace Tematínských kopců na západním Slovensku. Příspěvek k fytogeografii a fytosociologii vápencových obvodů

Author contributions

All authors have contributed to the nomenclature research and the critical revision of the manuscript.

Acknowledgements

We are grateful for the valuable advice of the editor Wolfgang Willner. We are also grateful to Nicolas Fumeaux (Botanical Garden, Geneva), to Réka Sebestyén and Gábor Papp (Hungarian Natural History Museum, Budapest) for their help with bibliographical references, and to Jan Roleček (Czech Academy of Sciences, Brno) for linguistic help with Czech.

- v jihozápadních výběžcích karpatských [Vegetation of the Tematín hills in western Slovakia. A contribution to the phytogeography and phytosociology of limestone regions in the southwestern foothills of the Carpathians]. Rozpravy České akademie věd a umění. Třída 2, vědy matematické, přírodní 40: 1–46.
- Solomakha IV, Shevchuk VL, Solomakha VA (2017) Review of the higher vegetation units and diagnostic species of Ukraine according to the Braun-Blanquet approach [in Ukrainian]. Taras Shevchenko National University, Kiev, UA, 116 pp.
- Soó R (1928) Adatok a Balatonvidék flórájának ismeretéhez I [Contribution to the knowledge of the flora of the Balaton region I]. Archivum Balatonicum. Magyar Biológiai Kutató Intézet Munkái 2: 132–136.
- Soó R (1929a) Die Vegetation und die Entstehung der Ungarischen Pusztta. Journal of Ecology 17: 329–350. <https://doi.org/10.2307/2256046>
- Soó R (1929b) Kísérleti ökológiai tanulmányok a Balaton vidékén [Experimental-ecological studies at the Balaton]. Matematikai és Természettudományi Értesítő 46: 603–614.
- Soó R (1929c) Experimental-ökologische Studien am Ballaton (Plattensee). Mathematische und Naturwissenschaftliche Berichte aus Ungarn 36: 116–126.
- Soó R (1930a) A modern növényföldrajz problémái, irányai és irodalma. A növényszociológia Magyarországon [On problems, tendencies and literature of modern Geobotany]. Magyar Biológiai Kutató Intézet I. Osztályának Munkái 3: 1–51.
- Soó R (1930b) Vergleichende Vegetationsstudien – Zentralalpen-Karpathen-Ungarn – nebst kritischen Bemerkungen zur Flora der Westkarpaten. Veröffentlichungen des Geobotanischen Institutes Rübel in Zürich 6: 237–322.
- Soó R (1931) Adatok a Balatonvidék vegetációjának ismeretéhez III [Contribution to the knowledge of the vegetation of the Balaton region III]. Magyar Biológiai Kutató Intézet I. Osztályának Munkái 3: 169–185.
- Soó R (1934) A Balatonvidék növényszövetkezeteinek szociológiai és ökológiai jellemzése [The plant communities of the Balaton region. Sociological and ecological overview]. Matematikai és Természettudományi Értesítő 50: 669–712.
- Soó R (1939) Homokpuszta és sziki növényszövetkezetek a Nyírségen [Sand and alcaline steppe associations of the Nyírség]. Botanikai Közlemények 36: 90–108.
- Soó R (1940) Vergangenheit und Gegenwart der pannonicischen Flora und Vegetation. Nova Acta Leopoldina N. F. 9: 3–49.
- Soó R (1947) Revue systématique des associations végétales des environs de Kolozsvár (respectivement de la Mezőség et de la région de la Sámos, en Transylvanie). Acta Geobotanica Hungarica 6: 3–50.
- Soó R (1959) Systematische Übersicht der pannonicischen Pflanzengesellschaften II. Acta Botanica Academiae Scientiarum Hungaricae 5: 473–500.
- Soó R (1964) A magyar flóra és vegetáció rendszertani-növényföldrajzi kézikönyve I. (Synopsis systematico-geobotanica florae vegetationis Hungariae I) [Systematic-geobotanical synopsis of the flora and vegetation of Hungary I]. Akadémiai Kiadó, Budapest, HU, 589 pp.
- Soó R (1968) Neue Übersicht der höheren zönologischen Einheiten der ungarischen Vegetation. Acta Botanica Academiae Scientiarum Hungaricae 14: 385–394.
- Soó R (1973) A magyar flóra és vegetáció rendszertani-növényföldrajzi kézikönyve V. (Synopsis systematico-geobotanica florae vegetationis Hungariae V) [Systematic-geobotanical synopsis of the flora and vegetation of Hungary V]. Akadémiai Kiadó, Budapest, HU, 724 pp.
- Terzi M, Di Pietro R, Theurillat JP (2016) Nomenclature of the class *Festuco-Brometea* in Italy and remarks on the interpretation of articles 1 and 2b ICPN. Botany Letters 163: 307–319. <https://doi.org/10.1080/23818107.2016.1201692>
- Terzi M, Di Pietro R, Theurillat JP (2017) Proposal (21): to conserve the name *Festucetalia valesiacae* Br.-Bl. & Tx. ex Br.-Bl. 1950 against *Festucetalia* Soó 1940. Phytocoenologia 47: 305–307. <https://doi.org/10.1127/phyto/2017/0186>
- Theurillat JP, Aeschimann D, Küpfer P, Spichiger R (1995) The higher vegetation units of the Alps. Colloques Phytosociologiques 23: 189–239.
- Theurillat JP, Willner W, Fernández-González F, Bültmann H, Čarni A, Gigante D, Mucina L, Weber H (2021) International Code of Phytosociological Nomenclature. 4th edition. Applied Vegetation Science 24: e12491. <https://doi.org/10.1111/avsc.12491>
- Timár L, Bodrogközy G (1959) Die pflanzengeographische Karte von Tiszazug. Acta Botanica Academiae Scientiarum Hungaricae 5: 203–232.
- Toman M (1975) Material k fytocenologii společenstev třídy *Festuco-Brometea* na Pavlovský kopčích (Jižní Morava) [Material for the Phytosociological Communities of the Class *Festuco-Brometea* at the Pavlov Hills (Jižní Morava)]. Zborník Pedagogickej Faculty v Prešove Univerzity P. J. Šafárika v Košiciach 1: 127–134.
- Willner W, Sauberer N, Staudinger M, Schrott-Ehrendorfer L (2013) Syntaxonomic revision of the Pannonian grasslands of Austria – Part I: Introduction and general overview. Tuexenia 33: 399–420.
- Willner W, Čarni A, Fernández-González F, Pallas J, Theurillat JP (2021) Report 2 of the Committee for Change and Conservation of Names (CCCN). Vegetation Classification and Survey 2: 305–309. <https://doi.org/10.3897/VCS/2021/78172>
- Willner W, Kuzemko A, Dengler J, Chytrý M, Bauer N, Becker T, Bită-Nicolae C, Botta-Dukát Z, Čarni A, ... Janišová M (2017) A higher-level classification of the Pannonic and western Pontic steppe grasslands (Central and Eastern Europe). Applied Vegetation Science 20: 143–158. <https://doi.org/10.1111/avsc.12265>
- Zólyomi B (1936) A pannóniai flóratartomány és az északnyugatnak határos területek sziklanövényzetének áttekintése [Overview of the rocky vegetation in the Pannonian floristic province and the north-western bordering regions]. Annales historico-naturales Musei nationalis hungarici, Pars botanica 30: 136–174.
- Zólyomi B (1958) Budapest és környékének természetes növénytakarója. [Natural vegetation of Budapest and its surroundings]. In: Pécsi M, Marosi S, Szilárd J (Eds) Budapest természeti képe [Natural portrait of Budapest]. Akadémiai Kiadó, Budapest HU, 509–642.
- Zólyomi B (1966) Neue Klassifikation der Felsen-Vegetation im pannonicischen Raum und der angrenzenden Gebiete. Botanikai Közlemények 53: 49–54.

E-mail and ORCID

Jean-Paul Theurillat (Corresponding author, jean-paul.theurillat@unige.ch), ORCID: <https://orcid.org/0000-0002-1843-5809>
Romeo Di Pietro (romeo.dipietro@uniroma1.it), ORCID: <https://orcid.org/0000-0003-4983-8931>
Norbert Bauer (bauer.norbert@nhmus.hu), ORCID: <https://orcid.org/0000-0001-6037-0773>
Massimo Terzi (massimo.terzi@cnr.it), ORCID: <https://orcid.org/0000-0001-8801-6733>